

REMARKS

Applicants' attorney wishes to thank the Examiner for the careful consideration given to this application.

For convenience of amendment, the prior claims have been canceled in favor of newly presented claims 16 - 31. The newly presented claims generally correspond with the original claims, except the subject matter of original claim 2 is included in claim 16, and claims 21 and 22 are specific to the HfO_2 layer and silicon substrate embodiments. The claims have been amended to conform with U.S. claim style and to include appropriate corrections requested by the Examiner.

The matters raised in the Office action are discussed below in the same order as presented by the Examiner.

Each of the matters noted by the Examiner in the claim objections in paragraph 1 has been corrected. Accordingly, an appropriate article has been inserted at the beginning of each of the claims, the drawing designations have been replaced by recitation of appropriate physical features and appropriate Markush terminology has been adopted.

The rejections of the claims under 35 USC 112, second paragraph, are discussed below.

As requested in paragraph 2(A), the reference numerals have been deleted from the claims and appropriate physical limitations included.

In response to paragraphs 2(B) and 2(C), the phrases "one of these materials" and "characterized in that" have been deleted from the claims.

It is requested that the Examiner reconsider and withdraw the request set forth in paragraph 2(D) since the step of "immobilizing oligonucleotides" is not a step of the claimed method. Claim 22 is directed to a method for producing a solid support, not a method for immobilizing oligonucleotides. Indication of the intended function of the support does not comprise an essential element of the method. Accordingly, MPEP Section 2172.01 is not applicable.

It is requested that Examiner reconsider and withdraw the rejection of the claims under 35 USC 102(a) or (e) as being anticipated by U.S. patent 6,262,219 to McCall. As surmised by the Examiner, amendment of the claims to overcome their indefiniteness clarifies the distinctions over McCall as discussed below.

The McCall patent does not contemplate a solid support comprising a substrate and a layer deposited on the substrate:

"of at least one material selected from the group consisting of HfO_2 , TiO_2 , Ta_2O_5 and ZrO_2 , said layer providing a surface for immobilizing oligonucleotides, said surface having undergone a treatment to make it hydrophilic."

McCall does not teach a deposited layer of titanium dioxide or zirconium dioxide having a surface, treated to make it hydrophilic, for immobilizing oligonucleotides. As the Examiner appreciates, McCall teaches a functionalized silicon compound to which molecules may be attached.

Accordingly, McCall does not suggest or appreciate the improvements and advantages obtained in accordance with the present invention. More particularly, the present invention tends to overcome the prior art solid support problems resulting from the lack of sufficiently satisfactory surface homogeneity for fixing oligonucleotides as discussed at page 3, lines 10 - 12 and 15 - 17 of the specification. The improved homogeneity in accordance with the invention is shown by the comparison between the inventive support and the prior art support as discussed at page 6, line 21 to page 7, line 5 of the specification. This improvement is shown by the improved uniformity of the fluorescence signal obtained.

The further rejection of the claims under 35 USC 103(a) as being unpatentable over McCall in view of U.S. patent 6,537,755 to Drmanac is overcome for the same reasons set forth above. Drmanac is cited in connection with its deposition teachings, and therefore, it does not remedy the deficiencies of the McCall teachings.

The further rejection of the claims as being unpatentable over McCall in view of U.S. patent 6,403,382 to Zhu et al is overcome for the same reasons set forth above. Zhu et al is cited in connection with its etching teachings, and therefore, it does not remedy the deficiencies of the McCall teachings.

For all of the foregoing reasons, claims 16-31 presently of record are in condition for allowance and such action is requested.

If there are any further fees required by this communication not covered by the enclosed check, or if no check is enclosed, please charge the same to Deposit Account No. 16-0820, Order No. 31476.

Respectfully submitted,

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